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10/542,278	07/14/2005	Beng Ghee Tan	5731-000012/US/NP	5095
28997 7590 05/12/2009 HARNESS, DICKEY, & PIERCE, P.L.C 7700 Bonhomme, Suite 400 ST. LOUIS, MO 63105				
EXAMINER VELEZ, ROBERTO				
ART UNIT		PAPER NUMBER		
2829				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/542,278

Applicant(s)

TAN, BENG GHEE

Examiner

Roberto Velez

Art Unit

2829

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 21-28, 43 and 44 is/are rejected.
- 7) ☒ Claim(s) 7-20 and 29-42 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 July 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/06)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

Claim Objections

1. Claims 13 and 35 are objected to because of the following informalities: Claims 13 and 35 recite "whether the tester measurement tool". Previously to this mentioning, there is no other mentioning of "tester measurement tool". To avoid lack of antecedent basis, Applicant is encourage to modify the claim in order to recite "whether a tester measurement tool". Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-2, 21, 23-24 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Humphrey et al. (US Pat. 6,777,966) in views of Russell (US Pat. 4,342,958), Marcuse et al. (US Pat. 6,573,702), and Hembree et al. (US Pat. 6,218,848).

Regarding claims 1 and 23, Humphrey et al. shows (Figures 1-5) a system and a method for optimizing cleaning of a probe card including: a probe card [14] arranged to test the functionality of dies on a wafer (Col. 6, Ln 2-4); when a die fails the probe test the tester module [10] is arranged to trigger probe needle cleaning (Col. 6, Ln 4-11).

Humphrey et al. fails to disclose when a die fails the probe test, the probe card is further arranged to report failures to contact the pads of the die to a tester module, the

tester module arranged to assess an electrical characteristic of the probe needles; and if the electrical characteristic of a probe needle is greater than a predetermined value the tester module is arranged to trigger probe needle cleaning. However, Russell discloses when a die fails the probe test, the probe card is further arranged to report failures to contact the pads of the die to a tester module (abstract), Marcuse et al. discloses a tester module arranged to assess an electrical characteristic of the probe needles; and if the electrical characteristic of a probe needle is outside a particular range the tester module is arranged to trigger probe needle cleaning (Col. 6, Ln 1-32) and Hembree et al. discloses assessing an electrical characteristic of the probe needles; an if the electrical characteristic of a probe needle is greater than a predetermined value the tester module is notified that probe needle cleaning is required (Col. 8, Ln 55-67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Russell, Marcuse et al., and Hembree et al. into the device of Humphrey et al. by arranging the probe card to report failures of contact the pads of the die to a tester module, the tester module arranged to assess an electrical characteristic of the probe needles; and if the electrical characteristic of a probe needle is greater than a predetermined value the tester module is arranged to trigger probe needle cleaning. The ordinary artisan would have been motivated to modify Humphrey et al. in the manner set forth above for the purpose of avoiding meaningless test results or unnecessary further testing or replacing non-faulty components that tested as failed because of dirty probes.

Regarding claims 2 and 24, the combination of Humphrey et al., Russell, Marcuse et al., and Hembree et al. discloses everything as claimed above in claims 1 and 23; in addition, Humphrey et al. shows (Figures 3-4) a separate device [20] arranged to perform the probe needle cleaning.

Regarding claims 21 and 43, the combination of Humphrey et al., Russell, Marcuse et al., and Hembree et al. discloses everything as claimed above in claims 1 and 23; in addition, Marcuse et al. discloses wherein the characteristic is resistance (Col. 6, Ln 1-32).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Marcuse et al. for the purpose of using a well known in the art technique to identify accumulation of debris in the probe needles.

4. Claims 3 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Humphrey et al. (US Pat. 6,777,966), Russell (US Pat. 4,342,958), Marcuse et al. (US Pat. 6,573,702), and Hembree et al. (US Pat. 6,218,848) as applied to claims 1 and 23 above, and further in view of Cooper et al. (US Pat. 7,084,650).

Regarding claims 3 and 25, the combination of Humphrey et al., Russell, Marcuse et al., and Hembree et al. discloses everything as claimed above in claims 1 and 23.

The combination of Humphrey et al., Russell, Marcuse et al., and Hembree et al. fails to disclose wherein a tester module controls the probe and probe module.

However, Cooper et al. discloses wherein a tester module [13] controls the probe [21] and probe module [10] (Col. 3, Ln 1-15).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Cooper et al. into the device of the combination of Humphrey et al., Russell, Marcuse et al., and Hembree et al. by using a tester module to control the probe and probe module. The ordinary artisan would have been motivated to modify the combination of Humphrey et al., Russell, Marcuse et al., and Hembree et al. in the manner set forth above for the purpose of saving cost by using a single tester module to control a plurality of devices, instead of having a corresponding tester module for each probe and probe module.

5. Claims 4 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Humphrey et al. (US Pat. 6,777,966), Russell (US Pat. 4,342,958), Marcuse et al. (US Pat. 6,573,702), Hembree et al. (US Pat. 6,218,848) and Cooper et al. (US Pat. 7,084,650) as applied to claims 3 and 25 above, and further in view of Tomishima (US Pat. 6,807,109).

Regarding claims 4 and 26, the combination of Humphrey et al., Russell, Marcuse et al., Hembree et al. and Cooper et al. discloses everything as claimed above in claims 3 and 25.

The combination of Humphrey et al., Russell, Marcuse et al., Hembree et al. and Cooper et al. fails to disclose wherein the tester module is arranged to assess whether the probe test is a pass or a fail. However, Tomishima discloses wherein the tester

module is arranged to assess whether the probe test is a pass or a fail (Col. 4, Ln 62-67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Tomishima into the device of the combination of Humphrey et al., Russell, Marcuse et al., Hembree et al. and Cooper et al. by using a tester module to assess whether the probe test is a pass or a fail. The ordinary artisan would have been motivated to modify the combination of Humphrey et al., Russell, Marcuse et al., Hembree et al. and Cooper et al. in the manner set forth above for the purpose of having a device able to verify the functionality of the dies.

6. Claims 5 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Humphrey et al. (US Pat. 6,777,966), Russell (US Pat. 4,342,958), Marcuse et al. (US Pat. 6,573,702), Hembree et al. (US Pat. 6,218,848), Cooper et al. (US Pat. 7,084,650) and Tomishima (US Pat. 6,807,109) as applied to claims 4 and 26 above, and further in view of Yang (US Pat. 6,352,868).

Regarding claims 5 and 27, the combination of Humphrey et al., Russell, Marcuse et al., Hembree et al., Cooper et al. and Tomishima discloses everything as claimed above in claims 4 and 26.

The combination of Humphrey et al., Russell, Marcuse et al., Hembree et al., Cooper et al. and Tomishima fails to disclose wherein if the test is a fail the tester module is further arranged to determine whether or not to skip the die. However, Yang discloses wherein if the test is a fail the tester module is further arranged to determine whether or not to skip the die (Col. 6, Ln 18-26).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Yang into the device of the combination of Humphrey et al., Russell, Marcuse et al., Hembree et al., Cooper et al. and Tomishima by using a tester module to determine whether or not to skip the die. The ordinary artisan would have been motivated to modify the combination of Humphrey et al., Russell, Marcuse et al., Hembree et al., Cooper et al. and Tomishima in the manner set forth above for the purpose of reducing the cost of the test system and its maintenance.

7. Claims 6 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Humphrey et al. (US Pat. 6,777,966), Russell (US Pat. 4,342,958), Marcuse et al. (US Pat. 6,573,702), Hembree et al. (US Pat. 6,218,848), Cooper et al. (US Pat. 7,084,650), Tomishima (US Pat. 6,807,109) and Yang (US Pat. 6,352,868) as applied to claims 5 and 27 above, and further in view of Rohrbaugh et al. (US Pat. 5,495,578).

Regarding claims 6 and 28, the combination of Humphrey et al., Russell, Marcuse et al., Hembree et al., Cooper et al., Tomishima and Yang discloses everything as claimed above in claims 5 and 27.

The combination of Humphrey et al., Russell, Marcuse et al., Hembree et al., Cooper et al., Tomishima and Yang fails to disclose wherein the tester module is further arranged to instruct the probe to re-probe the die if the die is not skipped. However, Rohrbaugh et al. discloses wherein the tester module is further arranged to instruct the probe to re-probe the die if the die is not skipped (since is decided to re-probe the die,

the Examiner is interpreting it as if the die is not skipped)(Col. 22, Ln 50 through Col. 23, Ln 5).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Rohrbaugh et al. into the device of the combination of Humphrey et al., Russell, Marcuse et al., Hembree et al., Cooper et al., Tomishima and Yang by using a tester module to instruct the probe to re-probe the die if the die is not skipped. The ordinary artisan would have been motivated to modify the combination of Humphrey et al., Russell, Marcuse et al., Hembree et al., Cooper et al., Tomishima and Yang in the manner set forth above for the purpose of discarding the possibility that the failure to the test probe was because of the probe being dirty and not that the die itself was bad.

8. Claims 22 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Humphrey et al. (US Pat. 6,777,966), Russell (US Pat. 4,342,958), Marcuse et al. (US Pat. 6,573,702) and Hembree et al. (US Pat. 6,218,848) as applied to claims 1 and 23 above, and further in view of Schwartz et al. (US Pat. 6,118,894).

Regarding claims 22 and 44, the combination of Humphrey et al., Russell, Marcuse et al. and Hembree et al. discloses everything as claimed above in claims 1 and 23.

The combination of Humphrey et al., Russell, Marcuse et al. and Hembree et al. fails to disclose wherein the characteristic is voltage. However, Schwartz et al. discloses wherein the characteristic is voltage (Col. 3, Ln 42-60).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Schwartz et al. into the device of the combination of Humphrey et al., Russell, Marcuse et al. and Hembree et al. by assessing the voltage of the probe needles. The ordinary artisan would have been motivated to modify the combination of Humphrey et al., Russell, Marcuse et al. and Hembree et al. in the manner set forth above for the purpose of identify accumulation of debris in the probe needles.

Allowable Subject Matter

9. Claims 7-20 and 29-42 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
10. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record, taken alone or in combination, fails to disclose or render obvious, a system and a method for optimizing cleaning of a probe card including: wherein if the re-probe produces a pass result, the tester module is further arranged to assess whether the maximum number of dies per clean has been exceeded, as recited in claims 7 or 29 and in combination with all the limitations of claims 6 or 28.

Claims 8-20 and 30-42 depending from claims 7 or 29 are objected for the same reason.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Roberto Velez whose telephone number is 571-272-8597. The examiner can normally be reached on Monday-Friday 8:00am- 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ha Nguyen can be reached on 571-272-1678. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roberto Velez/
Examiner, Art Unit 2829
05/08/2009

/Ha T. Nguyen/
Supervisory Patent Examiner, Art Unit 2829